

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Rec'd PCT/PTO 24 SEP 2004



Applicant's or agent's file reference 103942 PJ/HA	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/FI 03/00162	International filing date (day/month/year) 05.03.2003	Priority date (day/month/year) 26.03.2002
International Patent Classification (IPC) or both national classification and IPC H04M1/02		
Applicant NOKIA OYJ et al		

- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 5 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

 These annexes consist of a total of 3 sheets.

- This report contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

Date of submission of the demand 03.10.2003	Date of completion of this report 08.07.2004
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**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/FI 03/00162

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1, 2, 4-8 as published
3 filed with telefax on 17.06.2004

Claims, Numbers

1-11 filed with telefax on 17.06.2004

Drawings, Sheets

1/3-3/3 as published

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-11
	No: Claims	
Inventive step (IS)	Yes: Claims	1-11
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-11
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

The present **application** relates to a user interface for providing operational input to a portable telecommunication device without using keys or corresponding manual input.

A similar user interface is known from the disclosure of the document **EP-0973138**.

According to this known user interface a signal is produced, when the portable communication device is moved. Depending on said signal single operations can be effectuated as e.g. generate an alarm call if no motion is detected for a certain period of time. The **problem** is that the signal produced by said user interface merely represents the kinetic state of the portable communication device, i.e. it is used as a simple motion detector.

Aim of the present invention is thus to produce a signal that can perform a desired operation in a portable telecommunication device in direct interaction with the user like e.g. to activate a choice in the menu of the device.

The **invention** thus lies in a control means for controlling a desired operation of the portable telecommunication device by means of the signal induced when the portable telecommunication device is moved.

Such a user interface is neither disclosed or rendered obvious by the cited documents. Documents GB-2358336 and WO-0127735 disclose a similar user interface, however, the motion detection in said user interface implies additional components, i.e. accelerometers, which represents a higher cost in the production of the portable communication devices. The cited documents EP-1109378, US-5379032, US-6195571 and WO-0154780 relate to general technical details of portable telecommunication devices.

Therefore, the invention as set out in claim 1 meets the requirements of Articles 33(2)-(4) PCT.

Dependent claims 2 to 10 relate to preferred embodiments of the invention. Therefore, claims 2 to 20 meet the requirements of Articles 33(2)-(4) PCT.

**INTERNATIONAL PRELIMINARY
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Independent claim 11 corresponds to claim 1 in terms of a method and meets,
therefore, the requirements of Articles 33(2)-(4) PCT.

ration to one of the contacts 54, 55 an electric circuit 53 is grounded as indication of vibration or movement. The described component, in the example given by US 6,195,571, is used in addition to a vibrating device that provides the tactile vibrations for silent annunciation. Such added component incurs extra expenditure and also takes up space.

The present invention is based on the use of electromechanical actuators, such as vibrators, which are common components in portable telecommunication devices, and which typically are provided with a small DC motor driving an eccentric weight, as in EP-A2-0 973 138. When the device, such as a mobile phone, is moved rapidly, for example shaken, the eccentric weight will turn the rotor of electric motor. This movement of the rotor induces a small inductive voltage, typically approximately 10 mV, in the stator coil. This induced voltage can be measured and used as a control signal for controlling a desired operation, such as switching the telecommunication device to a specific mode, such as voice command mode. The user interface according to the present invention is thus characterised by the fact, that a common actuator already existing in the portable telecommunication device, is used 'reversely', by measuring an electric signal when the device is shaken or moved otherwise by the user in a corresponding manner.

Characteristic features of the present invention are in detail presented in the enclosed claims.

The present invention has several advantages: No additional components are needed for controlling the device when this is done without pressing keys, as an existing vibrator unit or some other actuator provided with means operating in a similar manner can be used by the user interface for controlling the operation of the device. The user can give commands to the device simply by for example shaking the device.

In the following, the invention will be described in more detail with reference to the appended drawings, in which

Figure 1 illustrates a mobile terminal with a vibrator,
Figure 2 illustrates a vibrator unit,

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CLAIMS

1. User interface for providing operational input to a portable telecommunication device without using keys or corresponding manual input means, the user interface comprising:

an electromechanical actuator (25) including an electrical drive means (13,14,41) provided with supply means for electrical power and a movable means (12,15,24,42) arranged in relation to the drive means in such a way that the movable means performs a mechanical movement when electrical power is supplied to the drive means, and wherein an electric signal is induced in the drive means when the portable telecommunication device is moved in a way that causes the movable means to move, and

a sensing unit (23,60) for sensing the induced electrical signal, **characterised** in that the user interface further comprises:
a control means (21, 70) for controlling a desired operation of portable telecommunication device by means of the signal induced in the drive means.

2. User interface as defined in claim 1, **characterised** in that the control means (21, 70) includes means for providing a control signal used for switching a function on/off.

3. User interface as defined in claim 1, **characterised** in that the control means (21, 70) includes means for providing a control signal used for switching the telecommunication device to a specific mode.

4. User interface as defined in claim 1, **characterised** in that the control means (70) includes means for stopping the movable means in such a position that makes it possible for it to move when the portable telecommunication device is moved.

5. User interface as defined in claim 1, **characterised** in that the control means (70) includes means for stopping the movement of the movable means before the portable telecommunication device is switched to a induced electrical signal operation mode.

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6. User interface as defined in claim 1, **characterised** in that the control means (21) includes means for providing an identification signal for informing the user that the portable telecommunication device is switched to a induced electrical signal operation mode.

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7. User interface as defined in claim 1, **characterised** in that the sensing unit (23,60) includes means for providing an identification signal identifying the direction of movement of the movable means.

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8. User interface as defined in claim 1, **characterised** in that the electromechanical actuator is a rotating electric motor (13,14) provided with rotating eccentric means (12,15).

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9. User interface as defined in claim 1, **characterised** in that the electromechanical actuator is a linear electric actuator provided with coil means (41) and a moving magnetic core (42).

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10. User interface as defined in claim 1, **characterised** in that the sensing unit comprises an amplifier (63) and a threshold unit (62) whereby a control signal is generated in the control unit (21) when the voltage exceeds a pre-defined threshold voltage,.

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11. Use of an electromechanical actuator (75) including an electrical drive means (13,14,41) provided with supply means for electrical power and a movable means (12,15,24,42) arranged in relation to the drive means in such a way that the movable means performs a mechanical movement when electrical power is supplied to the drive means, and wherein an electric signal is induced in the drive means when the portable telecommunication device is moved in a way that causes the movable means to move, as a user interface for providing operational input to a portable telecommunication device without using keys or corresponding manual input means for providing operational input in a portable telecommunication device.

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